REMARKS

Reconsideration and allowance of the above-identified application are respectfully requested. Claims 1, 2, 4-6 and 8-15 are now pending, wherein claims 1, 4-6, 8 and 15 are amended and claims 3 and 7 are canceled.

Claims 1 and 15 are objected to for minor informalities. Claims 1 and 15 have been amended in the manner suggested by the Office Action and withdrawal of this objection is respectfully requested.

The Office Action includes the following obviousness rejections under 35 U.S.C. § 103(a):

- Claims 1, 2, 9-12, 14 and 15 in view of the combination of the article "Application of the Self-Organising Map to Trajectory Classification" by Owens et al. ("Owens 2000") and the article "Novelty Detection in Video Surveillance Using Hierarchical Neural Networks" by Owens et al. ("Owens 2002").

- Claims 3, 7 and 8 in view of the combination of Owens 2000, Owens 2002 and the article "Visual Recognition of Emotional States" by Schwerdt et al. ("Schwerdt").

- Claim 13 in view of the combination of Owens 2000, Owens 2002 and U.S. Patent No. 4,198,653 to Kamin ("Kamin").

- Claim 4 in view of the combination of Owens 2000, Owens 2002, Schwerdt and U.S. Patent No. 6,411,328 to Franke et al. ("Franke").

- Claim 5 in view of the combination of Owens 2000, Owens 2002, Schwerdt and U.S. Patent No. 5,546,474 to Zuniga ("Zuniga").

- Claim 6 in view of the combination of Owens 2000, Owens 2002, Schwedt and U.S. Patent No. 7,058,205 to Jepson et al. ("Jepson").

For at least the following reasons, these grounds of rejection are respectfully traversed.

Claim 1 is amended to include the elements of claims 3 and 7, such that the claim now recites:

1. accumulating data representing the behavior of the tracks in a four-dimensional histogram; and

2. that the comparison process classifies a track according to a comparison of the frequency of occupation of a histogram cell with an occupancy threshold.

This second element, which was originally recited in claim 7, has been further amended to specify that the track is classified as normal based on the comparison of the frequency of occupation with the occupancy threshold. Thus, in the present invention a threshold is used with track information representing position and velocity in the x- and y- directions in the histogram to decide whether certain movement is normal for a certain position in the image. A histogram cell that includes a large number of tracks indicates that movement is normal, whereas a histogram with few tracks indicates that movement is uncommon, or abnormal. These features are not disclosed or suggested by the current grounds of rejection.

The Office Action relies upon a combination of Owens 2000, Owens 2002 and Schwerdt for the disclosure of the elements of claims 1, 3 and 7. Owens 2000 and Owens 2002 disclose techniques for identifying abnormalities in images by using trajectory information. For example, Owens 2000 determines whether a feature vector, based on position and movement, differs from a normal vector. As recognized by the Office Action, Owens 2000 and Owens 2002 are both silent with respect to the use of a four-dimensional histogram and the use of occupancy of a histogram cell.

The Office Action relies upon Schwerdt's for the disclosure of histograms. Schwerdt is directed to use histograms for recognizing emotional states from human facial expressions. Specifically, Schwerdt discloses selecting eigenvectors that contribute to the distinction of expressions to create a histogram and then using cells of the histogram to classify a video sequence among a set of possible types of facial expressions. Thus, in Schwerdt the histogram is not used for classifying normal or abnormal motion as recited in claim 1, but instead merely to classify a video sequence among a set of possible types of facial expressions.

More significantly, Schwerdt does not disclose or suggest using an occupancy threshold as part of a comparison to classify a track as normal based on frequency of occupation of a histogram cell. First, there is no disclosure or suggestion that an occupancy threshold is used in connection with the histogram cells. Second, Schwerdt does not disclose or suggest the use of a frequency of occupation of a histogram cell. Again, Schwerdt merely discloses selecting the appropriate eigenvectors for the histogram and comparing the histogram cells with a set of possible types of facial expressions. In other words, in Schwerdt if a histogram cell corresponds to one of the defined expressions then a match is found between the video sequence being analyzed and the desired, defined expressions. This does not involve an occupancy threshold or consideration of the frequency of occupation of a histogram cell.

Additionally, one skilled in the art would not have been motivated to combine Owens 2000 and Owens 2002 with Schwerdt. First, Owens 2000 and Owens 2002 are directed to detecting abnormalities based on trajectory, whereas

Schwerdt is directed to matching facial expressions. Second, in Schwerdt there are a limited, defined number of facial expressions, whereas in Owens 2000 and Owens 2002 there are a large number of undefined abnormalities. Thus, Owens 2000 and Owens 2002 do not attempt to match trajectories to predefined trajectories, but instead to identifying abnormal trajectories. In contrast, Schwerdt attempts to match facial expressions to known facial expressions.

Third, there is nothing in Schwerdt indicating that histograms could be used to detect abnormalities, such as those desired for detection in Owens 2000 and Owens 2002. Nevertheless, the Office Action states that one skilled in the art would have found it obvious to incorporate the histograms of Schwerdt into Owens 2000 and Owens 2002 in view of the disclosure in section 3.2, paragraph 6, line 8 of Schwerdt that "the memory space requirements are lower." Paragraph 6 of Schwerdt discusses that limiting the number of histogram cells results in the lower memory space requirements. This paragraph does not, however, disclose or suggest that the use of histograms results in a lower memory space requirement. As such, one skilled in the art would not have been motivated to incorporate Schwerdt's use of histograms into the combination of Owens 2000 and Owens 2002 to result in a lower memory space requirement. Accordingly, the Patent Office has not presented a sufficient rationale to incorporate the histograms of Schwerdt into the combination of Owens 2000 and Owens 2002. Instead, the Patent Office at best has provided motivation for limiting the number of histogram cells that are used, but not to actually use histograms.

Because the combination of Owens 2000, Owens 2002 and Schwerdt does not disclose or suggest the use of a histogram for comparing a frequency of occupation of a histogram cell with an occupancy threshold and one skilled in the art would not have been motivated to incorporate the use of histograms of Schwerdt into the combination of Owens 2000 and Owens 2002, the combination of Owens 2000, Owens 2002 and Schwerdt does not render claim 1 obvious.

Claim 15 is amended to include similar elements to those discussed above with regard to claim 1, and is patentably distinguishable over the current grounds of rejection for similar reasons. Claims 2, 4-6 and 8-14 are patentably distinguishable over the current grounds of rejection at least by virtue of their dependency. Accordingly, the obviousness rejections of claims 1, 2, 4-6 and 8-15 should be withdrawn.

If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 038819.55861US).

<div style="text-align:right">Respectfully submitted,</div>

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